

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In re Application of:

J. Hawkes, et al.

Serial No.: 10/527,887

Filed: August 18, 2005

For: APPARATUS FOR DIRECTING
PARTICLES IN A FLUID

Group Art Unit: 2856

Examiner: J. Saint Surin

October 16, 2007

Attorney Docket No. 41577/313584

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Dear Sir:

A. Introduction

This paper is submitted in response to the Office Action mailed May 31, 2007 in connection with the above-identified application. A Notice of Appeal and Petition for Extension of Time are submitted herewith. Although the Examiner has indicated claims 5-6, 13-18, and 21 would be allowable if rewritten in independent form, he has finally rejected claims 1-4, 7-12, and 19-20. Because Applicants believe the Examiner's final rejection of these latter claims lacks merit for at least *three* distinct reasons, they request review of the Office Action prior to their submitting an Appeal Brief.

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B. The Rejected Claims

Independent claim 1 of the application relates to an apparatus for directing particles entrained in a fluid. The apparatus comprises a chamber having first and second walls, with the first wall

- including means for generating a sound wave;
and the second wall
 - being capable of reflecting the sound wave; and
 - having a thickness such that the path length of the standing wave therein is a multiple of about one-half the wavelength of the sound wave therein.

U.S. Patent No. 5,711,888 to Trampler, et al. cited by the Examiner discloses *none* of these characteristics of Applicant's apparatus.

According to the Examiner, wall F (Fig. 4) of the Trampler patent is both capable of reflecting a sound wave and has a thickness as detailed in claim 1, hence functioning as the "second wall" recited in the claim. Wall F, however, is *expressly* described as being *acoustically transparent*, see Trampler, col. 18, l. 11, thus making it wholly *incapable* of reflecting a sound wave. For the Examiner to contend otherwise seems illogical.

Moreover, the Examiner *agrees* with Applicants that the thickness of the wall capable of reflecting a sound wave (*i.e.* the reflective wall) in the Trampler patent (mirror M in Fig. 4; reflecting mirror R in Fig. 6) is *not* as identified in claim 1. See Office Action at p. 3 ("the Examiner agrees with Applicant[s]"). Apparently, though, the Examiner believes it adequate to support the rejection that the wall thickness may be "chosen according to the invention." See id. at p. 4. The Examiner

cites *no* authority whatsoever for this contention, which is both legally and factually incorrect.

As Applicants noted in prior communications with the Examiner, the thickness of any reflective wall of the device of the Trampler patent is an *odd* multiple of one-quarter wavelength of the sound wave therein (*i.e.* 1/4, 3/4, 5/4). Further as previously noted by Applicants, the Trampler patent *affirmatively teaches away* from configuring the thickness of the reflective wall to be a multiple of one-half wavelength of the sound wave therein in order to *avoid* certain Eigen frequencies. See Trampler, col. 7, ll. 18-23. These Eigen frequencies result from the condition that the phase shift between the surface of the wall has to be a multiple of the number π , which corresponds to multiples of one-half wavelength of the sound wave therein. See id., col. 6, ll. 8-17; col. 7, ll. 54-58.

Finally, because the Examiner identifies wall F of the Trampler patent as being Applicants' "second wall," the "first wall" referenced in Applicants' claim 1 must correspond with mirror M of Fig. 4 of the Trampler patent. Clear, however, is that mirror M does *not* include "means for generating a sound wave," a requirement of the first wall of claim 1. This distinction provides yet a third reason for allowing claim 1 and its dependent claims.

Independent claim 19 is similar in pertinent respects to claim 1; accordingly, the same arguments apply as to its patentability. Applicants further reiterate their earlier remarks that the multiple deficiencies in the Trampler patent are *not* cured by an article from *Sensors and Actuators* entitled "Force Field Particle Filter, Combining Ultrasound Standing Waves and Laminar Flow," by J. Hawkes, et

al. (previously denoted the "Hawkes 1 Article"), also cited by the Examiner against various dependent claims. Indeed, disclosed in the Hawkes 1 Article is a separating apparatus comprising a transmission (first) wall and a reflector (second wall), the latter having thickness $5/4$ wavelength of the sound wave therein. *No* suggestion of configuring the thickness of the second wall to be a multiple of about one-half the wavelength of the sound wave therein appears in the Hawkes 1 Article.

Conclusion

Applicants request that the Examiner allow claims 1-21 and that a patent containing these claims issue in due course.

Respectfully submitted,



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